

## **TECHNICAL GUIDE**

### **For TOUGH GARD™ Spatter Cleaner**

- GENERAL SAFETY
- INSTALLATION
- MAINTENANCE
- TECHNICAL DATA
- ORDERING  
INFORMATION

Certified ISO 9001:2008  
Please read instructions prior to use.  
Save this manual for future reference.

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## WARRANTY

Product is warranted to be free from defects in material and workmanship for the period specified below after the sale by an authorized Buyer. Should there be a defect please refer to our Return Merchandise Policy.

| PRODUCT  | WARRANTY PERIOD |
|--|-----------------|
| TOUGH GUN™ Robotic MIG Guns and Components                                   | 180 days        |
| TOUGH GUN Reamer   | 1 year          |
| TOUGH GARD™ Spatter Cleaner  | 1 year          |
| TOUGH GUN™ Robotic Peripherals (Clutch, Sprayer, Wire Cutter, Mounting Arms) | 1 year          |
| Low-Stress Robotic Unicables (LSR Unicables)                                 | 2 years         |

Tregaskiss reserves the right to repair, replace or refund the purchase price of non-conforming product. Product found not defective will be returned to the Buyer after notification by Customer Service.

Tregaskiss makes no other warranty of any kind, expressed or implied, including, but not limited to the warranties of merchantability or fitness for any purpose. Tregaskiss shall not be liable under any circumstances to Buyer, or to any person who shall purchase from Buyer, for damages of any kind, including, but not limited to any, direct, indirect incidental or consequential damages or loss of production or loss of profits resulting from any cause whatsoever, including, but not limited to, any delay, act, error or omission of Tregaskiss.

Genuine Tregaskiss parts must be used for safety and performance reasons or the warranty becomes invalid. Warranty shall not apply if accident, abuse, or misuse damages a product, or if a product is modified in any way except by authorized Tregaskiss personnel.

## GENERAL SAFETY

Before installation or operation of the Tregaskiss TOUGH GARD™ Spatter Cleaner, please read and understand all safety precautions listed below. Failure to follow these instructions may result in personal injury or damage to the equipment.

1. Do not remove or deface warning and instruction labels from the unit.
2. Ensure that all equipment in the area is disabled and locked out before setting up, adjusting or conducting any work.
3. Ensure that electrical and pneumatic power to unit is off before performing maintenance or troubleshooting.
4. Ensure reset button is pressed to reset circuit board logic before doing any maintenance or troubleshooting with electrical power and or pneumatic power on.
5. Check that electrical and pneumatic connections comply with the codes applicable to your country / state.
6. Keep hands away from unit while in operation.
7. For additional safety information, please refer to the following publications:
  - a. ANSI STANDARD Z49.1, SAFETY IN WELDING AND CUTTING, American Welding Society, 550 LeJeune Rd. P.O. Box 351040, Miami, FL 33126
  - b. ANSI STANDARD, SAFETY OF ROBOTS AND ROBOT SYSTEMS, American National Standards Institute, 1430 Broadway, New York, NY 10018
  - c. NFPA STANDARD 70-1978. NATIONAL ELECTRIC CODE, National Fire Protection Association, 1470 Atlantic Avenue, Boston MA 02210

### **CALIFORNIA PROPOSITION 65 WARNING**

This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer.

This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. *Wash hands after use.*

(California Health & Safety Code Section 25249.5 at seq.)






## PRODUCT-SPECIFIC SAFETY INFORMATION

- Read all safety messages throughout this manual.
- Obey all safety messages to avoid injury.
- Note all safety warnings on product.
- Disconnect power before performing any maintenance on this product.

|   |  |
|---|--|
|  <p>©Clarion clarionsafety.com No. 151035-P8</p>   | <p><b>WARNING!</b><br/><b>CUT AND CRUSH HAZARD.</b></p> <p>Keep hands clear of all moving parts. Disconnect power to wire cutter before servicing.</p> |
|  <p>©Clarion clarionsafety.com No. 151036-P8</p>   | <p><b>WARNING!</b><br/><b>ROTATING CUTTER</b></p> <p>Keep hands clear. Disconnect power before servicing.</p>  |
|  <p>©Clarion clarionsafety.com No. 151039-P8</p>  | <p><b>WARNING!</b><br/><b>AUTOMATIC START</b></p> <p>Equipment starts automatically. Disconnect power before servicing or opening access door.</p>     |
|  <p>©Clarion clarionsafety.com No. 151032-P8</p> | <p><b>DISCONNECT POWER BEFORE SERVICING.</b></p>   |
|  <p>©Clarion clarionsafety.com No. 151174-P8</p> | <p><b>CONSULT YOUR SERVICE MANUAL BEFORE SERVICING.</b></p>  |

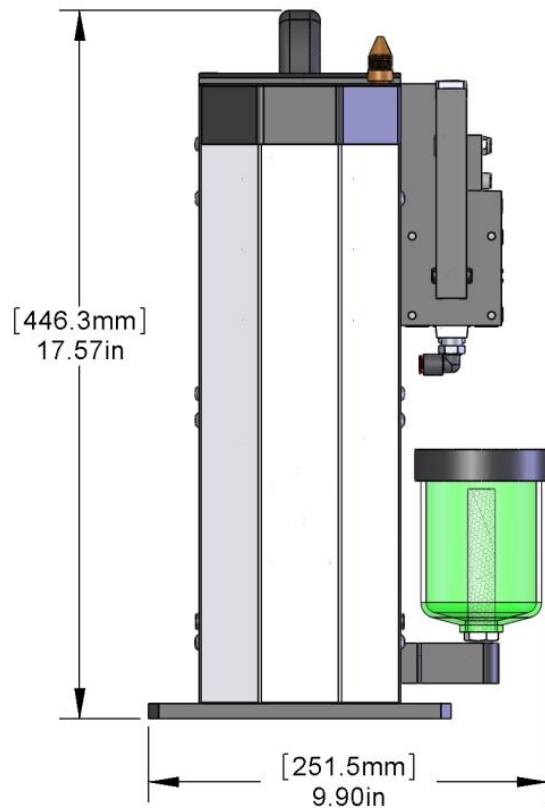
## SAFETY STICKER REORDERING INFORMATION

To replace your safety stickers, please call Clarion toll-free at 877-748-0244 (Canada or USA) or 570-296-5686 for international callers. Clarion website: [www.clarionsafety.com](http://www.clarionsafety.com)

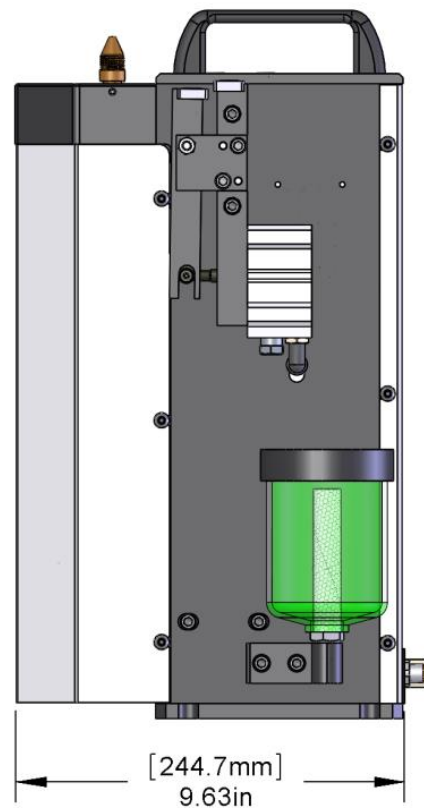
| STICKER IMAGE   | STICKER LOCATION                         | CLARION REORDER # |
|---|--|-------------------|
|    | On side of aluminum cover on wire cutter | C21616-01         |
|   | By power cord on back shroud             | C21616-02         |
|  | Above cutter blade on top of unit        | C21616-03         |

## 1.0 – INSTALLATION

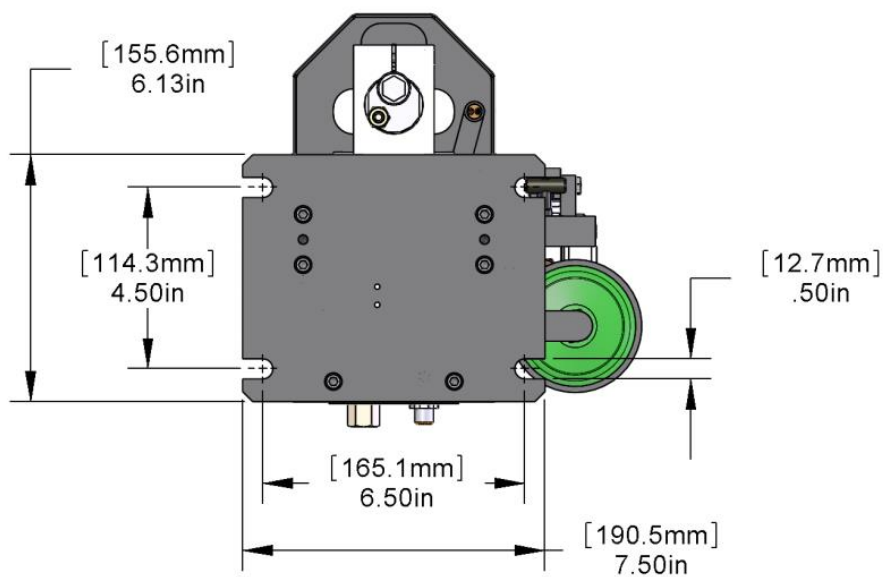
### 1.1 TOUGH GARD™ SPATTER CLEANER DIMENSIONS



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

## **1.2 TOUGH GARD SPATTER CLEANER SETUP**

### **MOUNTING TOUGH GARD SPATTER CLEANER**

1. TOUGH GARD Spatter Cleaner should be installed within the weld cell at a convenient location. Be sure to consider moveable fixtures and the working envelope of the robot when choosing an install location.
2. Affix base to sturdy platform using the four (4) M10 x 1.5 x 25 mm bolts provided.

### **CONNECTING AIR SUPPLY**

1. Use only filtered, dry air.
2. **IMPORTANT:** 60-90 PSI @ 16 CFM (4.2 - 6.5 bar @ 450 LPM) required at the TOUGH GARD Spatter Cleaner during operation.
3. Use an air supply line with an inside diameter of 3/8" (9.5 mm). Connect to 1/4" NPT female fitting located on back of unit.

### **AIR MOTOR LUBRICATION**

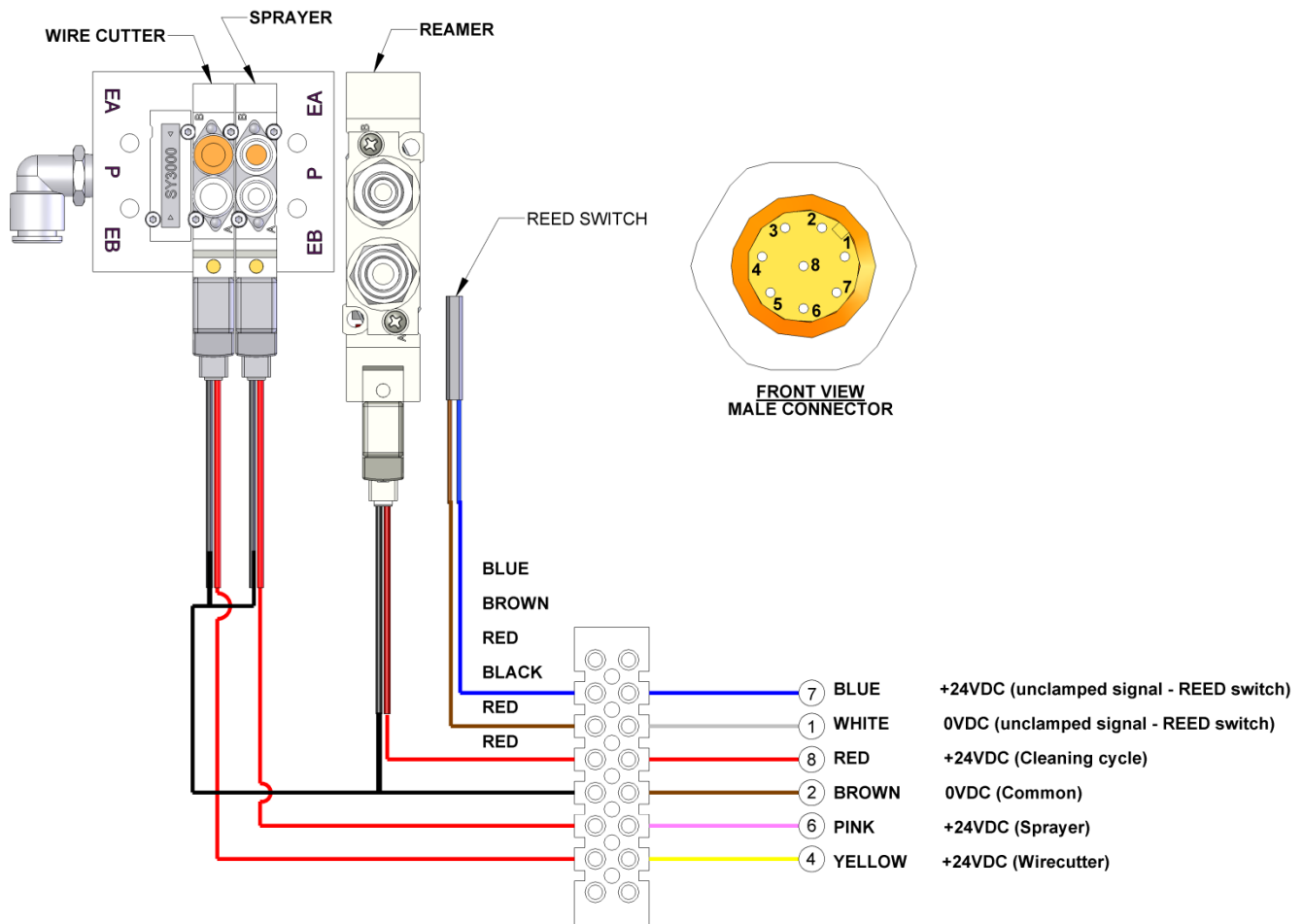
**IMPORTANT!** The air motor DOES NOT require any lubrication. It is designed to be run 'lube free'. The air MUST be dry, filtered and regulated to avoid any damage to the unit itself. If moisture or dirty air is allowed to enter the motor, it may negatively impact the performance of the motor or damage it permanently.

### **PROGRAMMING EVENTS SEQUENCE**

**Verify that the clamp cylinder is retracted (Unclamped output signal from REED switch).**

1. Position the robot to place the gun nozzle at a right angle (90°) to the top of the TOUGH GARD Spatter Cleaner. Insert the nozzle to the proper depth then center and press it against the v-block (see **Section 1.4 NOZZLE INSERTION HEIGHTS**).
2. **Cycle start** – supply output signal from the robot controller. Ensure output is on long enough to achieve full stroke (approx. 2-3 seconds).
3. Check for unclamped signal.
4. The robot can now be safely moved from the v-block to the next position.
5. After reaming, center the nozzle above the spray head.
6. Supply output signal from robot controller for about 0.3 seconds to sprayer valve (pink wire). Increase or decrease spray time as required.
7. After spraying, position the gun over the wire cutter blades. The welding wire should be against the edge of the stationary wire cutter blade.
8. Pulse the output signal, minimum of 0.5 sec, from robot controller to activate the wire cutter valve (yellow wire).
9. Once the welding wire has been cut and the moveable arm of the wire cutter has returned to 'home' position (cylinder has retracted and there is a visible gap between the cutter blades), the robot can be safely moved to the next position.

### 1.3 WIRING INTERFACE

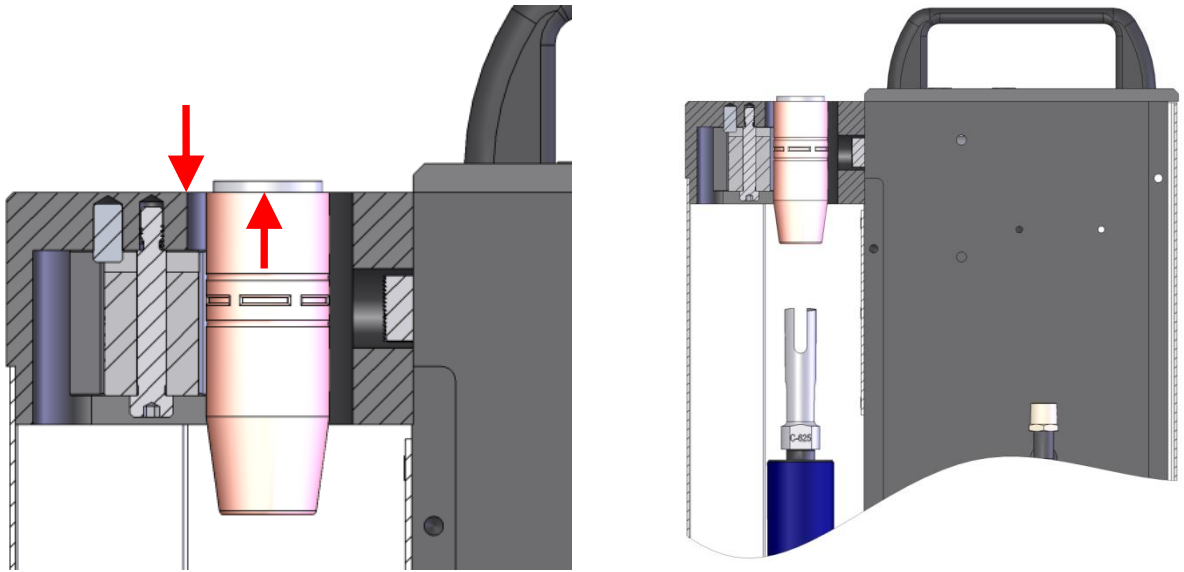


#### NOTE:

- This wiring interface is set up for “sourcing” I/O.
- For “sinking” I/O, reverse the polarity of pins 4, 6, 8 and 2.
- Reed Switch is polarity sensitive (pins 1 and 7).



## 1.4 NOZZLE INSERTION HEIGHTS

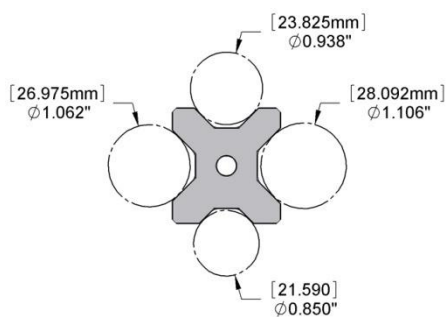
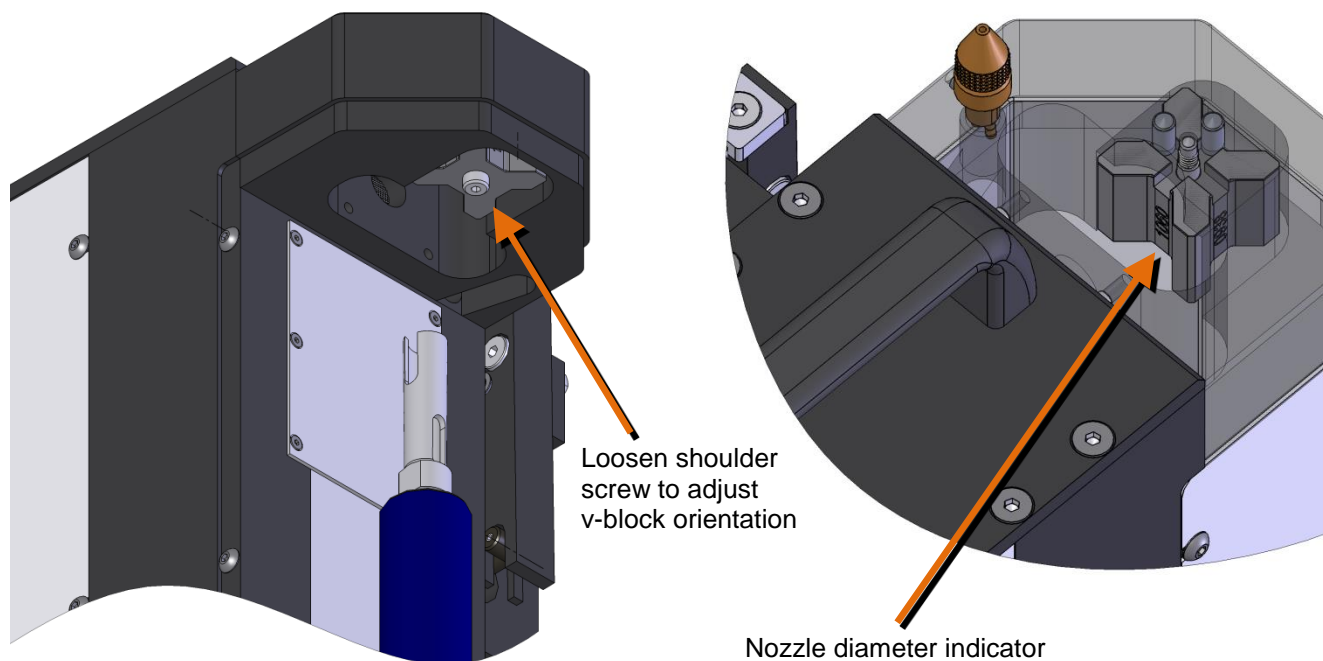


## INSERTION DEPTHS

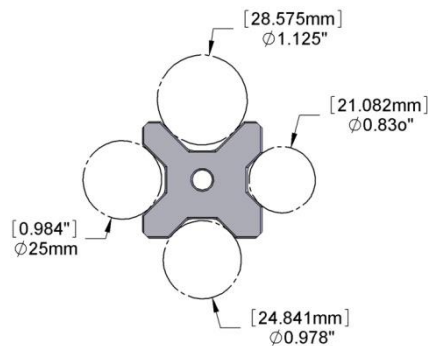
| CUTTER | NOZZLE<br>BORE SIZE | RETAINING HEAD |                                    |       |
|--------|---------------------|----------------|------------------------------------|-------|
|        |                     | 404-3          | 404-20 / 404-26<br>404-30 / 404-32 | 454-1 |
| C-625  | 5/8"                | Flush          | Flush                              | Flush |
| C-500  | 1/2"                | Flush          | Flush                              | Flush |

## 1.5 V-BLOCK SET-UP

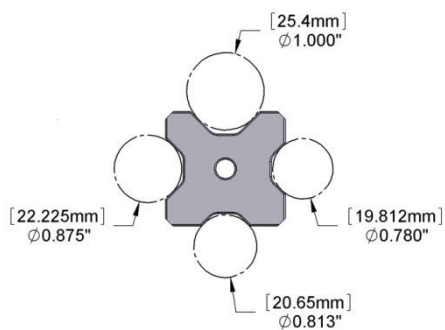
**IMPORTANT:** Ensure that the v-block alignment face is correct for the diameter of the nozzle being used (see Reference Chart on page 10). DO NOT attempt to use TOUGH GARD Spatter Cleaner until nozzle diameter and v-block position have been verified.



TR-2150



TR-2161




TR-2162

**1.6 CUTTER BLADE AND V-BLOCK CHART**

| NOZZLE PART # | NOZZLE OUTSIDE DIAMETER | CUTTER BLADE PART # |
|---------------|-------------------------|---------------------|
| 401-4-50      | 0.938" / 23.83 mm       | C-500               |
| 401-6-50      | 1.060" / 26.97 mm       | C-500               |
| 401-42-50     | 0.938" / 23.83 mm       | C-500               |
| 401-44-50     | 0.938" / 23.83 mm       | C-500               |
| 401-45-50     | 0.938" / 23.83 mm       | C-500               |
| 401-46-50     | 0.938" / 23.83 mm       | C-500               |
| 401-47-50     | 0.938" / 23.83 mm       | C-500               |
| 401-48-50     | 0.938" / 23.83 mm       | C-500               |
| 401-4-62      | 0.938" / 23.83 mm       | C-625               |
| 401-5-62      | 1.060" / 26.97 mm       | C-625               |
| 401-6-62      | 1.060" / 26.97 mm       | C-625               |
| 401-7-62      | 1.106" / 28.09 mm       | C-625               |
| 401-8-62      | 1.106" / 28.09 mm       | C-625               |
| 401-9-62      | 0.938" / 23.83 mm       | C-625               |
| 401-45-62     | 0.938" / 23.83 mm       | C-625               |
| 401-46-62     | 0.938" / 23.83 mm       | C-625               |
| 401-48-62     | 1.060" / 26.97 mm       | C-625               |
| 401-72-62     | 1.060" / 26.97 mm       | C-625               |
| 401-81-62     | 1.060" / 26.97 mm       | C-625               |
| 401-87-62     | 1.060" / 26.97 mm       | C-625               |

## 2.0 – MAINTENANCE

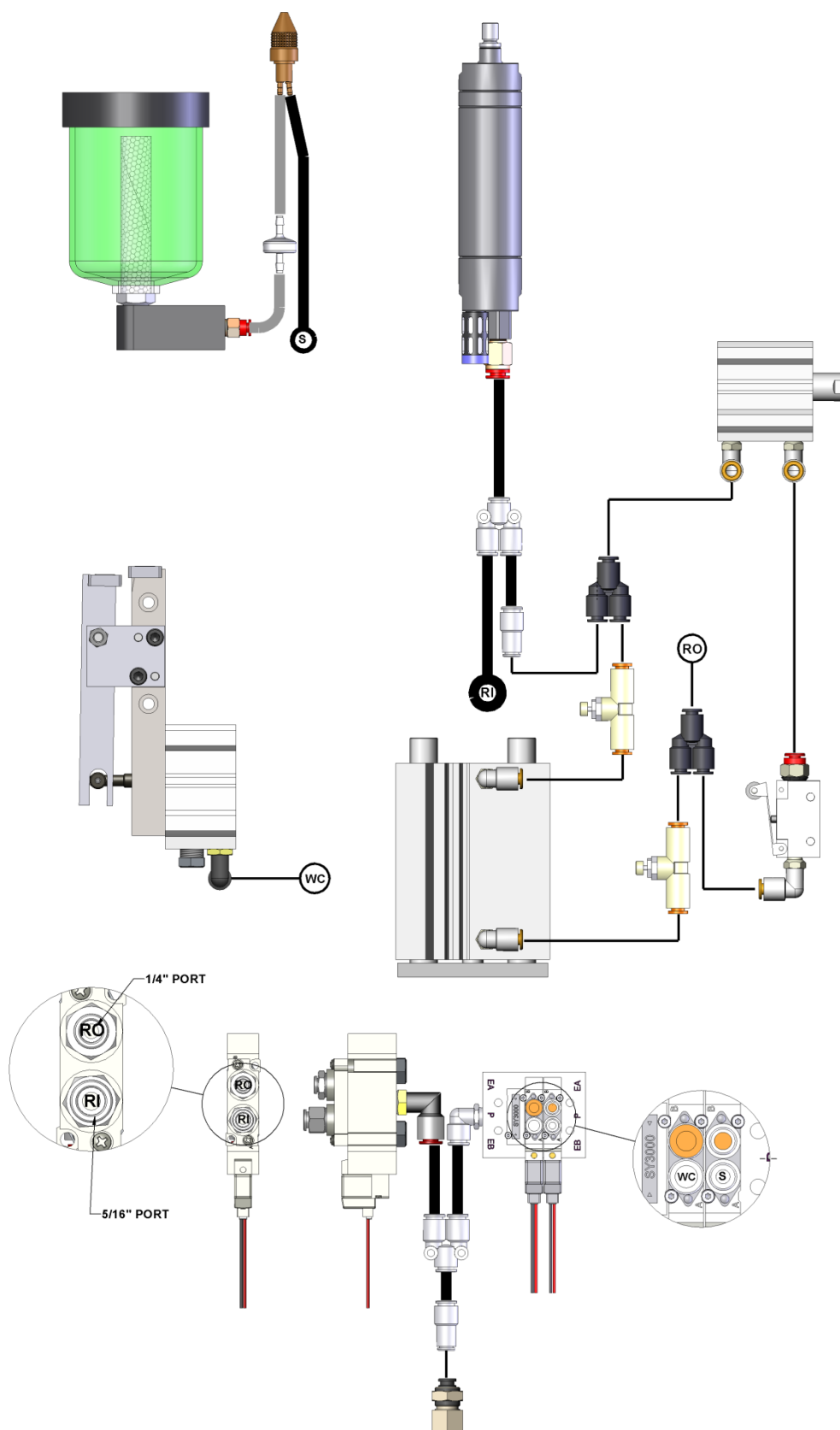
|   |   |
|---|---|
|  | <p><b>WARNING!</b><br/> <b>ROTATING CUTTER. AUTOMATIC START.</b><br/>         Keep hands clear of all moving parts.<br/>         Disconnect power before servicing.</p> |
|---|---|

## 3.0 – TECHNICAL DATA

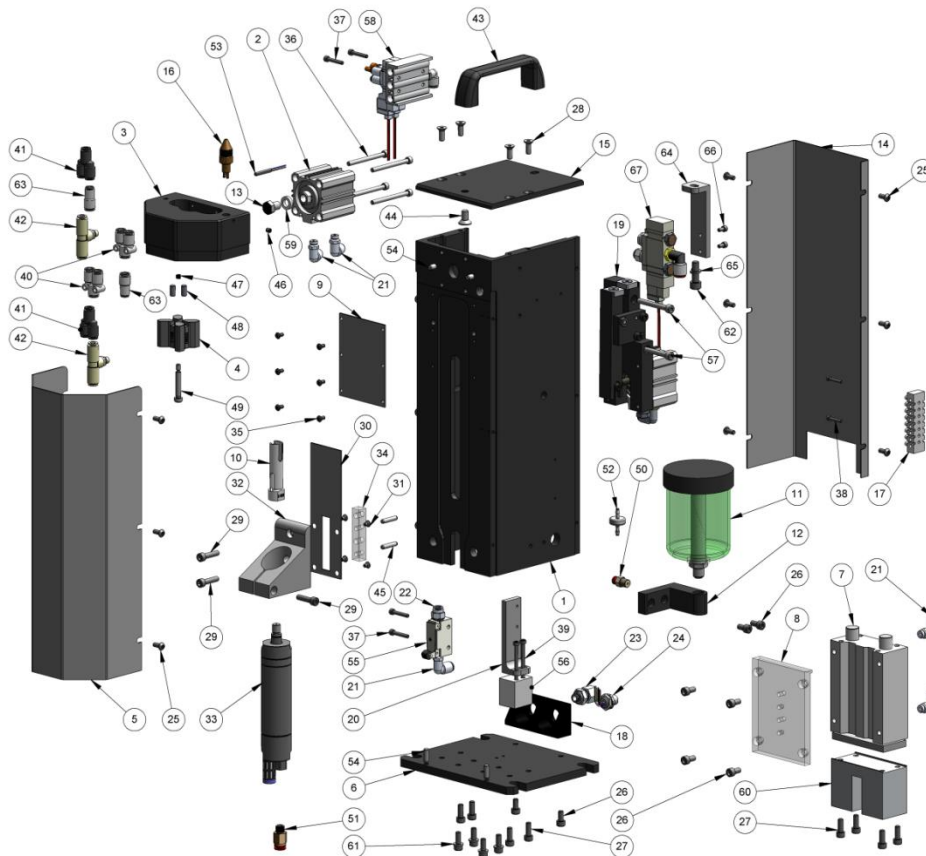
### 3.1 TECHNICAL SPECIFICATIONS

| I/O Requirements                            | Controller Sourcing                                     | Controller Sinking |   |
|---|---|--------------------|---|
|   | 24VDC   | 24 VDC             | Unclamped signal to REED switch                         |
|   | 0 VDC   | 0VDC               | <b>Input</b> – Unclamped “HOME” signal from REED switch |
|   | 24VDC   | 0 VDC              | <b>Output</b> – Cleaning cycle “START” signal           |
|   | 24VDC   | 0 VDC              | <b>Output</b> – Sprayer signal                          |
|   | 24VDC   | 0 VDC              | <b>Output</b> – Wire cutter signal                      |
|   | 0VDC  | 24VDC              | Common  |
| <b>Rated Voltage</b>                        | 24 VDC  |                    |   |
| <b>Operating Voltage</b>                    | ±10% of rated voltage                                   |                    |   |
| <b>Power Consumption</b>                    | 0.45 W per coil – max. wattage in operation 0.9 W       |                    |   |
| <b>Air Requirements (minimum)</b>           | 60 PSI at 6.4 CFM / 4.2 bar at 3 l/s                    |                    |   |
| <b>Air Motor (at min. air requirement )</b> | Stall Torque at 60 PSI = 46 in.-lbs. / 4.3 bar = 5.2 Nm |                    |   |
| <b>Cycle Time</b>                           | ~ 2.5 sec   |                    |   |
| <b>Product Dimensions (L x W x H)</b>       | 9.9 x 9.6 x 17.6 in. / 252 x 245 x 446 mm               |                    |   |

### 3.2 PNEUMATIC DIAGRAM



## 4.0 – ASSEMBLY VIEW & PARTS LIST



| ITEM | PART #    | DESCRIPTION  | QTY |
|------|-----------|--|-----|
| 1    |           | Reamer Frame Detail  | 1   |
| 2    |           | Clamp Cylinder   | 1   |
| 3    |           | Nozzle Clamp – V-Block Detail                                      | 1   |
| 4    | TR-2150   | 4-Sided V-Block (See Page 9 for Additional V-Block Configurations) | 1   |
| 5    | PER-2685  | Front Shroud   | 1   |
| 6    |           | Mounting Plate – Base  | 1   |
| 7    |           | Lift Cylinder SMC# MGQM25-75                                       | 1   |
| 8    |           | Lift Cylinder Adaptor Plate  | 1   |
| 9    |           | Spatter Shield Plate – Outer                                       | 1   |
| 10   | C-xxx     | C-625 for 0.625 Cutter; C-500 for 0.500" Cutter                    | 1   |
| 11   | RR-1320   | Reservoir  | 1   |
| 12   |           | Reservoir Bracket  | 1   |
| 13   | ER-2131   | Serrated Carbide Gripper Bolt                                      | 1   |
| 14   | PER-2680  | Rear Shroud  | 1   |
| 15   |           | Top Plate  | 1   |
| 16   | ER-500-15 | Spray Head Assembly  | 1   |
| 17   |           | Terminal Strip   | 1   |
| 18   |           | Service Connector Mount Detail                                     | 1   |
| 19   | WC-200    | Wire Cutter Assembly   | 1   |
| 20   |           | Valve Mount Bracket  | 1   |
| 21   |           | 90 Degree 1/8 Unifit Elbow   | 5   |
| 22   |           | 1/4" Port, 1/4 NPT Thread Fitting                                  | 1   |
| 23   |           | 1/4" - 1/4 NPT Bulkhead Fitting                                    | 1   |
| 24   | ER-2609   | 8 Pin Electrical Interface   | 1   |
| 25   |           | M5X.8X12mm LG SBHCS – Zinc Plate                                   | 12  |
| 26   |           | M6X1X12mm LG SHCS – Black Oxide                                    | 8   |
| 27   |           | M6X1X16mm LG SHCS – Black Oxide                                    | 12  |
| 28   |           | M6X1X16mm LG SCHCS – Black Oxide                                   | 4   |
| 29   |           | M6X1X25mm LG SHCS – Black Oxide                                    | 3   |
| 30   |           | Spatter Shield Plate – Inner                                       | 1   |
| 31   |           | M4X.7 X 6mm LG SCHCS – Black Oxide                                 | 4   |
| 32   |           | Motor Clamp Detail   | 1   |
| 33   | PER-2510  | Motor  | 1   |

| ITEM  | PART #     | DESCRIPTION                            | QTY |
|-------|------------|--|-----|
| 34    |            | Motor Clamp Spacer                     | 1   |
| 35    |            | M3X.5 X 6mm LG SCHCS – Black Oxide     | 6   |
| 36    |            | M5 X .8 X 60 SHCS                      | 4   |
| 37    |            | M4X.7X25mm LG SHCS – Black Oxide       | 4   |
| 38    |            | M3X.5X20mm LG SHCS – Black Oxide       | 2   |
| 39    |            | M4 X 0.7 X 45mm Long SHCS              | 2   |
| 40    | ER-2247    | Y Fitting for 5/16 Air Line            | 2   |
| 41    | 910-1A     | Y Fitting for 1/4 Air Line             | 3   |
| 42    |            | Flow Control                           | 2   |
| 43    |            | Carrying Handle                        | 1   |
| 44    |            | M8X1.25 X 12mm SCHCS                   | 1   |
| 45    |            | M5X24mm LG. Dowel Pin                  | 2   |
| 46    |            | M5X.8X6mm LG. SS Cup SKT – Black Oxide | 1   |
| 47    |            | 10-24 Recoil                           | 1   |
| 48    |            | 1/4 X 1/2 Dowel Pin                    | 2   |
| 49    |            | SHSS .250 X 1.25 Long 10-24 THD        | 1   |
| 50    |            | 4mm X 1/8 NPT Q/C Fitting              | 1   |
| 51    |            | 5/16 " Port, 1/8 NPT Thread Fitting    | 1   |
| 52    | TG-103-2-6 | Check Valve                            | 1   |
| 53    | ER-2560    | Reed Switch (SMC # D-A93)              | 1   |
| 54    |            | M6X16mm LG. Dowel Pin                  | 4   |
| 55    |            | Control Valve SMC# NVM121-01-01S       | 1   |
| 56    |            | Spacer Block                           | 1   |
| 57    |            | SHCS - M6 X1.0 X50mm Long              | 2   |
| 58    | PER-2200   | Valve Manifold Assembly                | 1   |
| 59    |            | Spacer                                 | 1   |
| 60    |            | Cylinder Riser                         | 1   |
| 61    |            | M6 Washer                              | 4   |
| 62    |            | M8X1.25X25mm LG SHCS – Black Oxide     | 1   |
| 63    |            | Reducer 5/16 to 1/4                    | 2   |
| 64    |            | Valve Mounting Bracket                 | 1   |
| 65    |            | M8 Spring Lock Washer                  | 1   |
| 66    |            | M4X.7X8mm LG SHCS – Black Oxide        | 2   |
| 67    | ER-2249    | Valve Assembly                         | 1   |
| 68    | TR-2910    | Cutter Wrench (Not Shown)              | 1   |
| NOTE: |            | ONLY SELLABLE PARTS ARE LISTED         |     |

## 5.0 – WIRE CUTTER (WC-200)

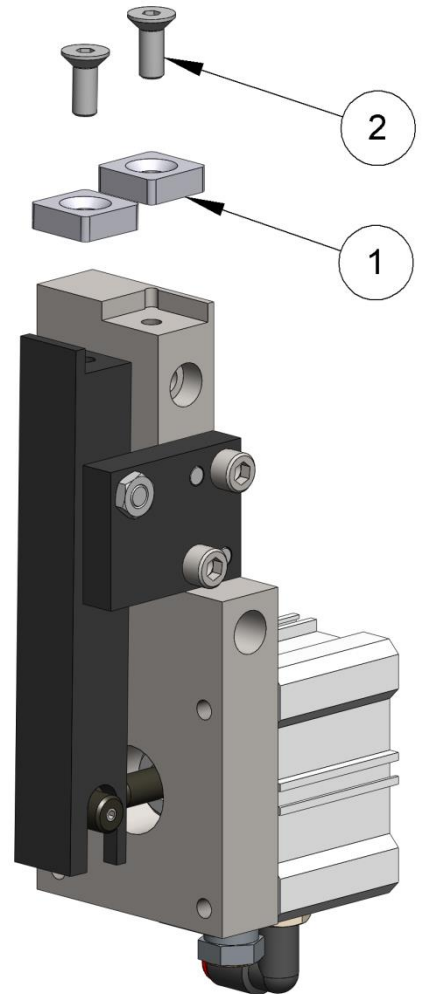
|   |   |
|---|---|
|  | <p><b>WARNING!</b><br/><b>CUT AND CRUSH HAZARD.</b><br/>Keep hands clear of all moving parts.<br/>Disconnect power to wire cutter<br/>before servicing.</p> |
|---|---|

### 5.1 PARTS LIST AND OPERATION

| ITEM # | PART #   | DESCRIPTION       | QTY |
|--------|----------|-------------------|-----|
| 1      | WC-100-7 | Wire Cutter Blade | 2   |
| 2      | -        | M6X1.0 SCHCS      | 2   |

### 5.2 WIRE CUTTER – BLADE CHANGE / REPLACEMENT

1. Remove the M6X1.0 SCHCS.
2. Rotate 90° to change cutting edge.
3. Replace the M6X1.0 SCHCS, and torque to 50 in.-lbs.



## 6.0 – ORDERING INFORMATION

The TOUGH GARD Spatter Cleaner is available in two different models with the following part numbers:

| MODEL   | PART NUMBER |
|---|-------------|
| TOUGH GARD Spatter Cleaner for 5/8" Bore Nozzles              | ER1-625W    |
| TOUGH GARD Spatter Cleaner for 1/2" Bore Nozzles              | ER1-500W    |
| TOUGH GARD Spatter Cleaner for 3/4" Bore Water-Cooled Nozzles | ER1-TG001W  |

To order a Tregaskiss TOUGH GARD Spatter Cleaner, please contact your local Tregaskiss Sales Representative for more information.



**For Technical Support:**

**Canada & U.S.A. Phone:** 1-877-737-3111

**International Phone:** +1-519-737-3000

**Email:** techservices@tregaskiss.com

**www.tregaskiss.com**

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